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E.O. 12958: DECL: 03/24/2028
TAGS: [MARR](#) [MASS](#) [MOPS](#) [PHUM](#) [NU](#)
SUBJECT: NICARAGUA MANPADS: RECOMMENDATION FOR SUPPORTING
MINISTRY OF HEALTH ASSISTANCE REQUEST

REF: 2007 STATE 138325 AND PREVIOUS (NOTAL)

Classified By: Ambassador Paul A. Trivelli for reasons 1.4 b & d.

11. (C/NF) SUMMARY. Between March 3 and March 13, 2008, a two-person team from the Armed Forces Medical Intelligence Center (AFMIC) was in Nicaragua to assess the condition and capacity of the Nicaraguan health sector. This mission was in support of ongoing U.S.-Nicaraguan bilateral discussions regarding Nicaraguan President Daniel Ortega's proposal to destroy 651 of Nicaragua's remaining stockpile of 1,051 Man Portable Air Defense Systems (MANPADS) in exchange for humanitarian medical equipment and supplies from the United States. One of the tasks of the AFMIC team was to evaluate the request for assistance put forward by Nicaragua's Ministry of Health (MINSA) with an eye to determining the value of possible packages that the USG could put forward in response to the MINSA request. Three possible options with rough cost breakdowns are detailed in the report appendix below.

12. (C/NF) Over the course of 10 days, the evaluation team -- comprised of two AFMIC medical administration experts, one USAID Health issues specialist (a Nicaraguan MD) and Embassy personnel -- visited hospitals, health clinics and medical facilities in 10 of Nicaragua's 13 provinces, including both the North and South Atlantic Coast Autonomous Regions (RAAN & RAAS). Following is the final report of the assessment team. This report is for internal USG-use only. We will provide a shorter, executive summary of the report to the Ministry of Health.

13. (C/NF) BEGIN REPORT TEXT.

RECOMMENDATIONS FOR SUPPORTING THE NICARAGUAN MINISTRY OF
HEALTH REQUEST FOR ASSISTANCE

Purpose: The purpose of this report is to provide the United States Department of State and the Government of Nicaragua with possible courses of action in supporting a request for assistance from the Nicaraguan Ministry of Health.

Scope: The health care system in Nicaragua consists of private hospitals, social security hospitals and the public health system under the cognizance of the Ministry of Health (MINSA). The public health system primarily consists of hospitals, health centers and health posts. Hospitals are classified as department hospitals, regional hospitals, and national referral centers.

Our assessment was conducted in the allotted time by concentrating on representative hospitals, health centers and an epidemiological laboratory located throughout the 13 departments and two autonomous regions of the country.

Key Assessments:

-- The medical infrastructure is severely degraded due to age, over-use and lack of financial resources. As a result, there is a shortage of supplies, equipment and trained personnel throughout the public health system. These deficiencies most likely contribute to the higher mortality rates in select groups.

-- The country's power grid is unstable, is prone to multiple daily power fluctuations, and appears to be damaging sensitive electronics contained in biomedical, medical support, and administrative equipment.

-- Medical personnel in Nicaragua consistently demonstrate an excellent clinical acumen and resourcefulness. With a shortage of diagnostic and monitoring equipment, they are forced to rely on their clinical skills. While clinically very capable, the shortage of equipment limits their ability to provide what is considered good-quality standard of care as commonly accepted by the Pan-American Health Organization (PAHO), World Health Organization (WHO), and in the United States.

-- Although MINSA has both a five-year and fifteen-year health plan, MINSA officials were not able to articulate the plan to us nor could they provide details about short term, mid-term and long term goals. A budgeting plan to support their stated goals was not evident. As a result, MINSA's ability to prioritize requests and develop efficient system-wide improvements is limited.

-- The Government of Nicaragua regularly receives assistance from other countries, non-governmental organizations (NGOs) and other entities. These donations, some of which are short-lived, are helpful but do not appear to be coordinated into a any larger health system improvement plan. Many of these donations are in the form of older outdated equipment and arrive without supplies, training, or support.

DISCUSSION

According to the WHO, Nicaragua spends 12 percent of its national budget on health care. This government spending comprises 47.1 percent of the total health care spending in the country. The remaining portion of health care spending, 52.9 percent, comes from private contributions. WHO indicates the Nicaraguan government spends \$31.6 (U.S. dollars) per capita on health care

The Ortega administration has directed MINSA to ensure that all Nicaraguans have access to health care, regardless of the citizens, ability to pay. At this time, they have yet to implement a new and increased budget to support that policy decision. Reporting from Sistemas Locales de Atencion Integral en Salud (SILAIS) departments and hospital leadership shows the 2007 expenditures exceeded the projected budget by more than 10 percent, and a projected budget for 2008 that has yet to be established and funded.

Lack of funding has led to a significant and prolonged degradation of infrastructure and an inability to support the national health system. In touring the different hospitals

and health centers several issues were immediately apparent:

-- The national power grid is unstable. All institutions report frequent power fluctuations and outages. As a result of these fluctuations and the lack of surge protection equipment, many of these facilities have problems with electrical circuit boards in medical and administrative equipment. Combined with the lack of funding, this leads to medical diagnostic equipment being either non-functional or functioning at a marginal rate at best.

-- Most medical facilities have antiquated buildings and infrastructure. Seventy-five percent of the oldest hospital visited was built of adobe in 1863. The building is still in use today. While it would be less expensive to build a new building than to continue to maintain them, the funding does not exist. Therefore, renovations are underway, but will do little to improve conditions. While not all buildings are this old, most show extreme signs of age and lack of proper maintenance.

-- Extreme lack of medical monitoring and diagnostic equipment brings additional constraints to providing health care. Most of the equipment currently in the inventory is archaic. Most was donated by foreign countries and other hospitals (from both inside and outside Nicaragua). Almost all of it, with a few exceptions, has been used prior to being donated. When this equipment breaks or needs re-supply, the needs can not be met due to the age of the equipment. In short, 1970's replacement parts are no longer available.

-- Hospitals and health centers may have only one or two items of equipment that is normally standard in a hospital such as ventilators, and other support equipment, including sterilizers, which are broken or short in number. The expenditures of manpower, to perform tasks manually, albeit less effectively, increases the need to seek support wherever it is available. This lack of equipment extends to their epidemiological laboratories, decreasing the efficiency of their surveillance program on a national level. There are currently two epidemiological laboratories in the country and MINSA would like to update the two and establish three more in an effort to increase monitoring and prevention of diseases.

-- Most medical property and biomedical equipment suffers from an extreme lack of maintenance. The major reason is an almost complete lack of preventative maintenance plans and trained biomedical repair technicians. Well-qualified maintenance specialists are also almost non-existent. Those who are trained in biomedical maintenance received training over a decade ago on what we previously described as archaic/antiquated equipment. Equipment provided by Venezuela is being donated with specialists who are charged with training the Nicaraguan users. This training has yet to begin.

The need for a long range plan for rebuilding the entire public health infrastructure cannot be over-emphasized. In order to develop a national plan and acquire sources of funding, short-range, mid-range and long-range goals need to be identified, articulated and then supported by a realistic financial plan. In talking to MINSA and hospital personnel, there seems to be some obstacles to developing such a way forward.

-- The entire health system needs to be rebuilt. This is an overwhelming prospect for a country facing increasing inflation and lacking a robust gross national product.

-- With the new health care model promising free health care to all patients, there is a high rate of usage at public facilities, including patients from neighboring countries, which increases the strain on an already over-stressed system.

-- Hospital directors do appear to have a sense of where they need to start improvements if funding were available and do

have a means of prioritizing their needs.

-- MINSA, which has responsibility for the entire public health system, appears to be overwhelmed and claims everything is a priority. They are unable to articulate a plan for prioritization of needs. Instead, MINSA representatives continuously emphasize that previous administrations are the cause of the current poor state of the Nicaraguan medical system. Their solution is for everything to be provided at once.

In spite of an inadequate work environment, shortage of funding, antiquated equipment, and a lack of sufficient professional staff, the capable and professional medical and nursing staff involved in the public health system do provide the very best direct patient care possible under circumstances. The lack of modern diagnostic and monitoring equipment forces these professionals to rely on their clinical acumen almost exclusively. They have proven extremely adept and resourceful at doing so. It must also be emphasized that the quality of care available at public hospitals in Nicaragua is far below the standard of care available at modern private facilities within the same border. A few examples include:

-- Physicians reported the lack of ventilators continues to be a contributing factor to many deaths within the hospitals. There is a need for many more ventilators and when one is not available, ventilation must be accomplished manually. This is not as efficient or effective.

-- Without diagnostic and monitoring equipment, it very difficult to diagnose and treat patient conditions regardless of how simple or complex.

-- In neonatal intensive care units, there are very few heating lamps that work, making it almost impossible to adequately heat infants.

-- The laboratory equipment that does exist requires manual intervention to complete tests. This leads to inefficiencies and human mistakes not common in more modern automatic equipment. One piece of equipment was dated 1922.

Regardless of the challenges in the Nicaraguan public health care system, there are numerous international donations and efforts underway to assist MINSA and the citizens of Nicaragua. While this assistance is desperately needed, there does not seem to be a plan in place for determining the most efficient use of donated resources. Examples include the following:

-- Venezuela recently finished donating a modern diagnostic wing (\$2.4 million) to a hospital in Managua. The Venezuelan government also promised to build a second diagnostic wing on another hospital in the country.

-- Japan built an entire hospital in 1998 and provided subsequent technical support and maintenance for two years. Today the support period has passed and both the equipment and facility have fallen into disrepair.

-- The Japanese government was reportedly committed to provide MINSA with 37 ground ambulances and one water ambulance during 2008. A date of arrival has not been provided, and a written plan for disbursement was not provided, although some facilities were verbally promised to receive one or more of these ambulances.

-- In Boaco, the Japanese have agreed to build a \$20 million hospital. Construction has not started and a date has not been set.

-- In an effort to improve care at regional referral centers and hospitals, relationships (to exchange information on research and treatment protocols) have developed with experts and specialty centers in several countries, including the United States, Italy, and Spain. Some of these relationships

yield free donations that amount to archaic equipment that is essentially dumped into Nicaraguan facilities, to be used only for few months or years before becoming inoperable and pushed into a corner of the facility.

A visit to a private hospital in Managua vividly brought the contrast between the public and private health systems into focus. The private hospital was approximately three and a half to four years old and in immaculate shape. There was a real effort to maintain the physical facility not noted in the public centers that were visited. The private hospital had a state-of-the-art power plant to protect the entire facility from the inadequacies and power fluctuations of the national power grid. Other observations included:

-- All equipment was modern state-of-the-art and had been purchased new.

-- Staff was trained and capable of maintaining the biomedical equipment as well as the physical infrastructure. This included a well-developed preventative maintenance plan.

-- Hospital management has a plan, which includes short, mid and long-range goals tied to identified funding sources.

-- Management had initiated and as focused on the process for certification by the International Joint Commission for the Accreditation of Healthcare Organizations, an expensive, labor-intensive and time-consuming process. It signals leadership's commitment to ensuring top-quality patient care.

CONCLUSIONS

The public health system in Nicaragua is in extremis despite the heroic efforts of an under-funded and overworked medical staff. There are numerous requirements for assistance and it will take years to improve health care provision in Nicaragua. Current efforts to maintain the current physical infrastructure of most facilities is a losing battle. Eventually replacing all the public facilities should be considered for the long term and a funding plan to carry this out should be identified.

Personnel must be trained to maintain and repair biomedical equipment. In conjunction, steps must be taken to improve the national power grid and/or at least to protect hospital equipment from the fluctuation and surges in power. Providing new and advanced equipment would be futile under the current environment, as it would be rendered useless within one to two years. Any equipment provided would need to be donated in conjunction with a technical support plan to include training for personnel who will remain responsible for future maintenance, and surge protection with each piece of equipment.

Something that is not considered in MINSA requests for assistance is the increase in cost associated with the installation and utilization of advanced technology. According to United States studies regarding medical equipment installation, when a new MRI is installed, a one unit increase in use leads to a corresponding increase in expense to national health care at a rate of \$32,900 per one million beneficiaries per month or \$395,000 per year (Baker L., et al, Health Affairs, November 5, 2003). Given the current financial state of the public health system in Nicaragua this would be an added burden for which they have neither budgeted nor have the means to support.

MINSA should consider developing a long-term strategic planning process to help identify short-term, mid-term and long-term goals. They also need to identify budget requirements and shortfalls so they can be addressed by the government. If this process is already in effect, it was not clearly evident nor were MINSA officials able to adequately articulate it. The expertise to initiate and implement this process does exist in Nicaragua as evidenced by what the private sector is currently doing.

There is no way to rapidly overcome years of neglect caused by underfunding, lack of training, and a poor public infrastructure.

RECOMMENDATIONS CONCERNING THE NICARAGUAN REQUEST FOR ASSISTANCE

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The Government of Nicaragua provided a comprehensive list of needed equipment. Given the current state of the public health system, there are many possible assistance packages that could be configured. Action should be taken in a phased approach to avoid a massive overload to an already fragile system. Taking into account the current problems with infrastructure, staffing, level of training and numerous shortages of equipment, the following three recommendations are submitted for consideration as a preliminary phase (POST NOTE: cost estimates for each course of action appear in Appendix 1 at bottom. END POST NOTE.):

COURSE OF ACTION ONE:

Rebuild and outfit the emergency room, neonatal and pediatric intensive care units and the laboratory at the children's hospital in Managua. This would include monitors, ventilators, beds, heating units and diagnostic test equipment as well as technical assistance and training in use and maintenance.

PROS:

This would help improve patient outcomes in an area where mortality is high. This hospital is a national referral hospital; the impact of these improvements will be beneficial across the country.

CONS:

This only addresses a small part of the needs required by the public health system. The staff may not currently have the expertise to utilize and maintain the equipment. MINSA will need to be willing to provide personnel for the required training and implement a term of service requirement to keep newly trained employees from seeking employment elsewhere. Since the national power grid is unstable, it could damage new equipment. Therefore, any new equipment must include surge protection in the package. A contract for maintenance and repair should be negotiated as part of any purchases.

COURSE OF ACTION TWO:

Purchase numerous ventilators, monitors and diagnostic test equipment for distribution to hospitals throughout the public health system.

PROS:

From a medical standpoint, this will enable medical staff to improve the quality of care in critical care units and emergency departments across the country.

CONS:

The number per facility is greatly reduced and overall impact may be less than narrowing the focus. Again, the requirement for training, maintenance and surge protection exists and must be included in the planning process. A contract for maintenance and repair should be negotiated as part of any purchases.

COURSE OF ACTION THREE:

Build a complete health center in Managua with state of the

art equipment to include physical therapy and occupational therapy capabilities.

PROS:

this will provide an important step forward in improving preventative medicine and primary care for entire families in the affected service area.

CONS:

This course of action directly affects a smaller portion of the population. As with the other two courses of action training, maintenance and surge protection are required. A contract for maintenance and repair should be negotiated as part of any purchases.

COMMENTS:

This course of action may also be considered in addition to outfitting the requested epidemiological laboratories. While not directly used in patient care, it does help improve overall health and monitoring in Nicaragua.

NOTE:

For courses of action that require construction, it is recommend that staff from the Health Facility Planning Agency (HFPA) be tasked to assist the Nicaraguan Government in planning and construction of any and all medical facilities constructed with U.S. dollars. HFPA is located in Washington D.C. and is a subordinate organization to the U.S. Army Medical Research and Material Command, within the U.S. Army Medical Command.

APPENDIX: COURSE OF ACTION ROUGH COST ESTIMATES

Based on MINSA and Hospital Director Requests and Equipment Cost Estimates. (Some estimates were obtained from the internet)

NOTE:

Construction costs could not be added in to any estimates as they will fluctuate based on design and space. They are estimated to be approximately USD 800 per square foot.

COURSE OF ACTION ONE

The cost estimate below is a rough estimate and lists equipment only. Construction estimates depend on the design and size of the renovations. Discussions with MINSA representatives indicate construction costs to be approximately USD 800 per square foot.

As some equipment costs were unable to be identified on-line, all cost numbers are estimates. These costs can change based on what configurations are purchased. Some of the monitoring equipment will also be needed for the emergency room even though it was not initially requested by the hospital during their presentation. Even though not all the prices are known, the total cost of equipment should be around one million dollars. If a fixed x-ray machine should be needed along with the supporting equipment, costs should not exceed 1.5 million dollars. Renovation of the hospital area under consideration should be able to be completed with the rest of the discussed dollar amount. Each piece of equipment should be connected to a UPS battery system, which should be purchased.

Neonatal ICU Items	Cost	Number	Total
Cost of Construction	800	(Per sq. foot est.)	
Bilirubin Meter	5,000	2	10,000
Infusion Pumps	600	6	3,600
Cephalic Box		10	
Neonatal Transport Beds	6,000	1	6,000
Neonatal Beds	3,500	10	35,000
Stethoscopes	150	5	750

Gasometer	28,000	1	28,000
Glucometer	200	3	600
Suction	1,500	5	7,500
Neonatal Blood Pressure Machines	800	5	4,000
Ventilators	42,000	5	210,000
Incubators	6,000	10	60,000
Swan Neck Lamps	300	3	900
Photo Therapy Lamps	2,000	6	12,000
Heating Lamps	2,450	6	14,700
Neonatal Laryngoscopes	2,000	5	10,000
Air Manometers	60	5	300
Oxygen Manometers	60	5	300
Cardiac Monitors	1,500	2	3,000
Vital Sign Monitors	1,600	2	3,200
PO2 and pco2 Monitors	500	2	1,000
Ultrasonic Nebulizers	200	3	600
Pulse Oximeters	240	3	720
Neonatal Scales	1,025	2	2,050
Medical Refrigerator	1,500	1	1,500

Subtotal 415,730

Pediatric ICU Items	Cost	Number	Total

Infusion Pumps	600	5	3,000
Neonatal Head Chamber		unknown	
Adult Head Chamber		unknown	
Pediatric Head Chamber		unknown	
Defibrillator	10,000	1	10,000
Adult Laryngoscope	2,000	2	4,000
Pediatric Laryngoscope	2,000	3	6,000
Cardiac Monitors	1,500	2	3,000
S/V Monitors			
Pulse Oximeters	240	2	480
Blood Pressure Machines			
Neonatal	800	1	800
Pediatric	800	2	1,600
Adult	800	2	1,600
Ventilators	42,000	5	210,000

Subtotal 240,491

X-ray Items			

Mobil X-ray	30,000	1	30,000
Automatic Plate Reader	400	1	400
Plate Dryer	500	1	500
Ultrasound	150,000	1	15,000

Subtotal 45,900

Laboratory Items			

Pipette Agitator	3,050	2	6,100
Tube Agitator	3,050	2	6,100
Bacteriological Autoclave	4,325	1	4,325
Electronic Scale	500	2	1,000
Warm Water Bath	1,184	2	2,368
Cell Counter	12,000	2	24,000
Drying Oven	2,500	1	2,500
Microscopes	1,352	3	4,056
Protein Refraction Meter	25,000	1	25,000
Spectrometer	3,152	1	3,152
Blood Plasma Freezer	2,000	1	2,000
Blood Refrigerator	1,000	1	1,000
Micro Centrifuge	2,500	1	2,500
Centrifuge	1,200	1	1,200
pH Meter	500	2	1,000
Thermometers	10	3	30

Subtotal 86,331

Equipment Estimate 788,452

Course of Action Two

The table below is an estimate of costs for a possible equipment purchase to disperse throughout the public health hospitals under MINSA. This list is based on the most critical diagnostic monitoring equipment as articulated by health care providers at the hospitals. This is an example only to demonstrate price but does provide for a large amount of equipment for distribution. The equipment mix can change as needed in consultation with MINSA.

Item	Cost	Number	Total
Ventilators	42,000	60	2,520,000
Vital Sign Monitors	1,600	60	96,000
Defibrillators	10,000	60	600,000
Cardiac Monitors	1,500	60	90,000
Infusion Pumps	600	200	120,000
Suction	1,500	100	150,000
Pulse Oximeters	240	200	48,000
Total			3,624,000

Course of Action Three

The cost of this course of action depends on the design and size of the health center and equipment. The current cost of construction is estimated to be about \$800 per square foot as discussed with MINSA representatives. The total cost should be within the discussed budget. Depending on final cost of the health center, it may also be possible to outfit the five epidemiological laboratories as requested by MINSA. The list of equipment they priced and provided came to just under 1.6 million dollars.

END REPORT TEXT
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